

A Work Project, presented as part of the requirements for the Award of a Master's Degree in Management from the NOVA – School of Business and Economics.

**THE INTERNATIONALIZATION PROCESS OF BORN GLOBAL FIRMS IN  
HIGH-TECH AND LOW-TECH INDUSTRIES – IS THERE ANY  
DIFFERENCE?**

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## **Abstract**

The impact of industry characteristics on born global firms' internationalization process is widely acknowledged. Even though there are studies focusing on both high-tech and low-tech industries, the differences between their internationalization patterns have not been generally analyzed. Through a multiple case-study research focusing on a comparison between both industries, we are able to identify differences in the internationalization pattern and specific influential factors. Our findings show that (1) high-tech firms are more international than low-tech ones; (2) the global nature of high-tech firms triggers internationalization while low-tech firms are driven by home market conditions and entrepreneurial traits; (3) networks have a distinct role between industries; (4) the concept of psychic distance may still be applied to this type of firms.

**Keywords:** Born Global Firms, Accelerated Internationalization, Low-Tech vs. High-Tech, Internationalization Pattern.

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## 1. Introduction

World-shattering technological, social and economic changes have enabled the rise of a new class of firms that internationalize from or shortly after inception. This phenomenon has been broadly studied since the early 90's and companies that pursue an early internationalization have been called as "international new ventures" or INVs (e.g. Oviatt and McDougall, 1994) and "born global firms" or BGFs (e.g. Rennie, 1993), characterized as "a business that, from inception, seeks to derive significant competitive advantage from the use and the sale of outputs in multiple countries" (Oviatt and McDougal 1994:49). The born global theory has been challenging traditional internationalization theories that focused on a stage or process model. While a great number of empirical studies on BGFs were conducted in small European countries (e.g. Kudina et al., 2008; Rasmussen et al., 2012), no considerable BGF-focused research was done in Portugal. This is surprising, since such research could be of high interest to Portugal, where SMEs account for 38.6% of the total volume of exports, 19% of the exporting firms are 5 years old or younger and 47% have less than 10 years of activity<sup>1</sup>. While scholars admit that a variety of environmental variables influence BGFs' internationalization process (Fernhaber et al. 2007; Evers, 2010), earlier research has predominantly focused on internal, entrepreneurial and firm-specific factors, as key determinants of young firms' internationalization behavior (Cavusgil and Knight, 2009). Also, while empirical evidence shows that BGFs exist in low-tech industries (e.g. Knight et al., 2001; Wickramasekera and Bamberly, 2003; Evers, 2010), most studies on BGFs have been conducted in high-tech-based sectors (e.g. Coviello and Munro, 1997; Preece et al., 1998; Johnson 2004). Such dominance of high-tech sector centered

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<sup>1</sup> According to the *Business Barometer*, a study conducted by Informa D&B. This study refers to the year of 2012, in Portugal: [https://www.informadb.pt/biblioteca/ficheiros/14\\_O\\_caminho\\_das\\_exportacoes.pdf](https://www.informadb.pt/biblioteca/ficheiros/14_O_caminho_das_exportacoes.pdf)

research created ground for some misperception, whereby High-Tech Small and Medium Enterprises (HTSME) became automatically associated with BGFs (Spence and Grick, 2006). Because high-tech and low-tech industries are inherently different (Fernhaber et al., 2007), without a systematic analysis of the internationalization process of high-tech and low-tech BGFs, our understanding of the born global phenomenon is at its best incomplete or even erroneous. Our study aims to start filling in this gap by answer the following questions: are there differences, and if yes, what are they, in internationalization patterns (speed, scope and extent) between high-tech and low-tech BGFs? Which factors (home market characteristics, the entrepreneur, networks and psychic distance) will influence these internationalization patterns and what is their relative importance? To answer these questions, we rely on the qualitative multiple case-study analysis of 7 BGFs (4 high-tech and 3 low-tech) originated in Portugal.

## **2. Literature Review**

### **2.1 From the Uppsala Model to the Born Global Firm**

The Uppsala Model of internationalization proposed by Johanson and Vahlne (1977) has been the most frequently used model within the international business literature. This theory postulates that companies firstly build a strong domestic base until they are pushed or pulled internationally by external factors. Also, their internationalization occurs in various incremental steps from no regular export to overseas productions (Oviatt and McDougall, 2005). The choice of the markets would also occur in stages and would be based on the concept of psychic distance, which represents the degree of uncertainty about a foreign market (regarding differences in culture, language, business practices, industrial development, education and political systems). This staged approach would happen because the firm is risk-averse and lacks experiential

knowledge (Johanson and Vahlne, 1977, 2009). In the 1980's, scholars began to notice the tendency of some companies to undertake early internationalization that was being facilitated by new market conditions, changing consumer preferences, communication and technological advances, shrinking product life cycles, global niche markets and global networks (Cavusgil and Knight, 2009). In fact, there is no consensus regarding the proper definition of a born global firm. Oviatt and McDougall (1994) define an INV by focusing on speed (i.e. time from the company's foundation and first internationalization) and scope (i.e. number of countries entered) while Rennie (1993) defines a BGF by focusing on speed and extent (i.e. percentage of sales in foreign countries). Madsen (2013) highlighted the differences within the literature, and recommended the use of the three dimensions in order to reach a clearer definition, allowing for theoretical comparisons. Nevertheless, some authors argue that the stage model still applies to born globals. Autio et al. (2000) noticed that most of the analyzed firms are in fact "born regional". This is so because these firms' founders possess important knowledge and networks that enable accelerated internationalization. In a similar vein, Madsen and Servais (1997) claim that the basic assumptions of the U-Model remain valid in the context of BGFs. Instead, the focal differences between the two approaches reside in the founders' background and characteristics as well as on recent market conditions.

## **2.2 Born Global Firm's Characteristics**

Born Globals are typically young and do not possess a wide amount of tangible resources (Cavusgil and Knight, 2009). They face the challenges of newness, smallness and foreignness (Zahra, 2005). However, this type of firm may obtain and preserve a competitive advantage through a number of intangible resources such as superior tacit

knowledge, organizational competences and networks (Rialp et al. 2005; Knight and Cavusgil, 2004). Oviatt and McDougall (1994, 2005) highlight the importance of some characteristics of the entrepreneurs that facilitate such behavior by these firms, such as previous international and industry experience. Knight and Cavusgil (2004) also focus on the founders, stating that they are active entrepreneurs, with a strong commitment and a global orientation. Due to these characteristics, their perception of uncertainty with regard to international markets is lower and they tend to perceive the world as one single marketplace (Madsen and Servais, 1997). BGFs usually follow a niche-focused strategy, mostly because they would lack the necessary resources to compete against the dominant players in the industry. These companies are also said to focus on product innovation, quality and service differentiation (Rennie, 1993; McDougall et al., 1994). Finally, the importance of networks is also highlighted by several authors (e.g. Knight and Cavusgil, 1996; Zahra, 2005) since they typically contribute to accelerate the firm's learning process (Freeman and Cavusgil, 2007).

### **2.3 Determinants of the Internationalization Process: Speed, Scope and Extent of internationalization**

Speed, scope and extent of internationalization are three dimensions that have an uttermost importance when seeking a coherent perspective of BGFs internationalization. As suggested by Madsen (2013), we also propose the use of the three dimensions as the main variables of BGFs' accelerated internationalization. Focusing on age has been a source of controversy in literature on BGFs. Rennie (1993) applies a time span of 2 years after foundation, while Gabrielsson et al. (2008) define BGFs as firms that have internationalize within 3 years after their birth. Nonetheless, researchers in recent years have been generally classifying as new ventures firms that are 6 years old or younger

(McDougall et al., 1994; Zahra et al, 2000). The scope of BGFs is often not taken into consideration (Kuivalainen et al., 2007). Haverston et al. (2000) considered only ventures with sales to at least three foreign markets. Finally, there are also different perspectives on the extent of internationalization. Knight and Cavusgil (1996) use a rate of 25%, which is the most frequently used percentage. Most of the cut-off points are considered by the authors as arbitrary. Obviously, the speed with which a company internationalizes, the markets targeted and the percentage of business that comes from foreign markets is influenced by a number of factors. Our extensive literature review and systematic analysis enabled us to identify several factors that may help understand the born global firms' internationalization patterns (as described in Tables 1, 2 and 3).

**Table 1 - Factors that Influence Internationalization Speed**

<b>Speed Factors</b>	<b>Authors</b>	<b>Description</b>
<b>Factors that enable accelerated internationalization</b>	Oviatt and McDougall (1994, 2005); Chetty and Campbell-Hunt (2004); Kudina et al. (2008)	Faster, more efficient and cheaper transportation, improvements and cost reductions in digital technology, e-business possibilities and lower fixed costs will accelerate the speed of internationalization.
<b>Home market size and demand</b>	Preece et al. (1998); Freeman et al. (2006); Kudina et al. (2008)	If a company operates in a sector with a very limited home-market potential (small market/demand), then going international fast seems to be a sound strategy.
<b>The entrepreneurial actor</b>	Oviatt and McDougall (1994, 2005); Madsen and Servais (1997) Knight and Cavusgil (2004); Johnson (2004); Rialp et al. (2005); Rasmussen et al. (2012)	Proactiveness, innovativeness and growth ambitions could be the drivers behind rapid internationalization. Previous international and industry experience, which provide knowledge to the entrepreneurs, have often been pointed as a key driver of rapid internationalization.
<b>Environmental Factors: Industry</b>	Oviatt and McDougall (1994, 2005); Johnson (2004); Arenius (2005); Freeman et al. (2006); Fernhaber et al. (2007); Evers (2010); Rasmussen et al. (2012) Tanev (2012)	A high degree of industry internationalization, knowledge intensity and unique technology will prompt faster internationalization. The speed will also differ between industries since some products are more difficult to sell internationally than others. A BGF is more likely to pursue internationalization in the growth stage of an industry.
<b>Networks</b>	Chetty and Campbell-Hunt (2004); Arenius (2005); Freeman et al. (2006); Gabrielsson et al. (2008); Evers (2011)	The pace at which a BGF penetrates a new market is affected by the speed at which it is able to locate suitable partners and customers. Firms rely on multiple strategies for rapid market entry through collaborative partnerships and client followership.



**Table 2 - Factors that Influence Internationalization Scope**

<b>Scope Factors</b>	<b>Authors</b>	<b>Description</b>
<b>Home market size and demand</b>	McNaughton (2003); Oviatt and McDougall, (2005)	If the company is founded in a country with a small domestic market and with insufficient demand the more likely it is to target numerous foreign markets.
<b>Environmental Factors: Industry</b>	Zahra et al. (2000); McNaughton (2003); Fernhaber et al. (2007); Evers (2011)	Homogeneity of products eases internationalization to markets all over the world. Companies from knowledge-intensive industries, that are globally orientated, tend to target many foreign markets.
<b>Networks</b>	Autio et al., (2000); Oviatt and McDougall (2005); Rialp et al. (2005); Freeman et al. (2012); Tanev (2012)	Networks are associated with faster venture internationalization and rapid increase in country scope. Business relationships have an impact on the particular market a firm will decide to enter.
<b>Psychic Distance</b>	Oviatt and McDougall, (1994); Wickramasekera and Bamberry (2003); Chetty and Campbell-Hunt (2004); Rialp et al. (2005); Freeman and Cavusgil (2007); Rasmussen et al. (2012)	BGFs' internationalization process does not seem to be driven by psychic distance since limited resources will force them to enter diverse markets, regardless of cultural differences. However, there is evidence showing that this is not always the case and that psychic distance may still matter for BGFs.

**Table 3 - Factors that Influence Internationalization Extent**

<b>Extent Factors</b>	<b>Authors</b>	<b>Description</b>
<b>The entrepreneurial actor</b>	Bloodgood et al. (1996); Preece et al. (1998); Autio et al. (2000); Nummela et al. (2004); Oviatt and McDougall (2005); Gabrielsson et al. (2010)	Management's attitude toward internationalization acts as a predictor of BGFs' international intensity. Entrepreneurial knowledge about international markets and operations is seen as an important determinant of international sales growth.
<b>Home market size and demand</b>	Andersson et al. (2004); Gabrielsson et al. (2010)	The ratio of exports is influenced by the size of the BGFs' country of origin and the country's neighbor markets.
<b>Environmental Factors: Industry</b>	Autio et al. (2000); Zahra et al. (2000); Andersson et al. (2004); Knight and Cavusgil (2004); Gabrielsson et al. (2008); Gabrielsson et al. (2010);	A dynamic, fast-changing and international industry may drive SMEs to expand their operations abroad. The knowledge intensity of SMEs is positively related with their international sales growth. The firm's globalization will also be influenced by the type of products/services offered.
<b>Networks</b>	Coviello and Munro (1997); Andersson et al. (2004); Fernhaber et al. (2007); Freeman and Cavusgil (2007); Gabrielsson et al (2008)	Networks and relationships influence the pattern of market development, enabling BGFs to broaden the expansion and growth of international activities. Also, because BGFs usually lack resources, they use alliances with other organizations in order to access a sufficient level of resources to grow.

The presented factors were chosen based on a consensus within the literature. Yet, this is a preliminary choice of factors and, naturally, others might be found. We can also notice that most factors will largely influence the three dimensions.

#### **2.4 Distinguished Characteristics of Low-Tech and High-Tech Industries**

There are several factors that are distinct for high-tech and low-tech firms such as the intensity of R&D expenses, the involvement of science and technical personnel and the number of obtained patent rights or signed license agreements (Zakrzewska-Bielawska, 2010). Because of high-tech firms' strong focus on intellectual capital, these companies frequently introduce technological or scientific innovations and knowledge to the market. High-tech industries tend to be dynamic with a fast-changing environment. They are usually competitive and have short product life cycles that lead to a fast product obsolescence (Nummela et al. 2004). This dynamic nature usually requires rapid internationalization in order for these firms to successfully compete and survive (McDougall et al., 2003; Johnson, 2004). On the other hand, low technology sectors consist of "mature" and stable industries, with longer product life cycles, being less constrained by global competition. Companies from low-tech industries are frequently based on an established technology that can be acquired through well-known channels (Solberg et al., 2008). Low-tech firms will usually have fixed assets that high-tech firms may not have and will use less R&D resources and technical personnel. Although the intrinsic characteristics of most low-tech industries do not usually impel early and rapid internationalization, the supply and demand conditions alone have been identified to be important factors for early internationalization (Evers, 2010). It seems evident that industry conditions influence the rate of internationalization. Fernhaber et al. (2007) developed a comprehensive study on the impact of industry context on BGFs'

internationalization, confirming the effect of industry dimensions (e.g. industry concentration, knowledge-intensity and internationalization). When looking at these dimensions, it is clear that low-tech and high-tech industries have dissimilar structures/characteristics and, therefore, we may expect differences in their internationalization pattern (speed, scope and extent) and also in the relative importance of the aforementioned factors. Nevertheless, there is a lack of both theoretical and empirical studies directly focusing on the potential differences between both industries.

## **2.5 Theoretical Propositions**

As previously discussed, the scope, speed and extent of internationalization appear to be influenced by a number of firm-specific and environmental factors. Among the most important, we have highlighted the home market, the entrepreneurial actor, networks and psychic distance. We expect these factors to have a different relative importance for high-tech and low-tech BGFs, as discussed in more detail below.

### *Home Market Characteristics*

BGFs' domestic market is seen by some authors as having small importance. Since these companies internationalize early, they may have a small or inexistent domestic market (Rennie, 1993; Chetty and Campbell-Hunt, 2004). Yet, a domestic market that is perceived as too small, not allowing for firm growth or financial viability, together with small domestic demand is often considered an important internationalization trigger (Freeman et al., 2006; Evers, 2010). In some cases, products are so specialized that the domestic demand proves to be scarce. Companies may also enter foreign countries to acquire resources that are in short supply at the home country (Cavusgil and Knight, 2009). The dynamic nature of high-tech industries may require these firms to

internationalize rapidly in order to be successful, in spite of the home market characteristics (McDougall et al., 2003). Conversely, low-tech firms operate in more stable industries that, by themselves, may not propel internationalization. For this type of firm, the domestic market conditions have been pointed out as important factors for early and rapid internationalization (Evers, 2010, 2011).

**Proposition 1:** Home market characteristics such as small size and lack of demand are more important in the internationalization of low-tech than high-tech firms.

### *Networks*

New ventures usually have limited resources and market knowledge due to a narrow operational background, facing particular constraints when rapidly internationalizing. Networks frequently enable the rapid initiation of foreign sales for BGFs, creating awareness of opportunities and facilitating their learning process. Through these networks, firms are able to diminish risk and share the financial burden of the internationalization process (Oviatt and McDougall, 2005; Yu et al., 2011). For high-tech BGFs, which are typically based on knowledge, collaborative partnerships and strategic cooperation can be highly important as they provide access to new ideas and complementary skills from other firms (Yu et al., 2011). These firms need rapid access to lead customers and partners as well as edge technology in order to compensate for high R&D costs and long pre-founding periods (Madsen and Servais, 1997; Kudina et al., 2008). In contrast, since low-tech firms are mostly comprised of tangible products, they will face the costs of production, movement of merchandise and warehousing (The Economist, 1998). Their products often compete on the basis of unique design and/or quality with products that are not innately global and might need some sort of

adaptation to foreign markets. To overcome these constraints, firms may need to obtain market knowledge and develop close networks with local suppliers. These networks may be facilitators or even pull the internationalization process, providing knowledge and giving access to international markets (Brush and Chaganti, 1997).

**Proposition 2:** Collaborative networks based on product complement and technical knowledge sharing are more important for high-tech BGFs, while host country networks based on market knowledge are more important for low-tech BGFs.

#### *The entrepreneurial actor*

BGFs' managers usually have a strong global orientation: they perceive the world as one single marketplace with global potential, and view international markets as an opportunity rather than as mere adjuncts to the home market (Freeman and Cavusgil, 2007; Cavusgil and Knight, 2009). Also, previous industry and international experience seems to be important, allowing for opportunity identification, a higher knowledge on international markets and network building (Oviatt and McDougall, 1994, 2005; Haverston et al., 2000). We expect that the characteristics of high-tech industries imply a natural global-orientation and quick adaptation to change environments. High-tech companies are likely to employ scientific and technical personnel and frequently trade with other high-tech companies that are already international (Fan, Phan, 2007), which facilitates their internationalization process. On the other hand, as low-tech companies are not typically driven to internationalization due to environmental variables and face higher barriers to internationalization (e.g. establishment of a physical presence in the host country, the need of local partners and specific knowledge about the market offering, locations and opportunities), the idiosyncratic characteristics of the

entrepreneur may be important facilitators. More specifically, international experience or psychological traits such as global orientation may help these entrepreneurs with opportunity identification, enhanced communication, enlarged market knowledge and contacts and networks previously created (Oviatt and McDougall, 2005).

**Proposition 3:** Entrepreneurial characteristics such as international experience and global orientation play a bigger role in the internationalization process of low-tech BGFs than in high-tech BGFs.

#### *Psychic Distance*

Cultural dimensions have long been studied and acknowledged as having major importance in the internationalization process of firms (e.g. Hofstede, 1983). The psychic distance postulate, proposed by Johanson and Vahlne (1997), sustains that the higher the psychic distance, the harder it is for firms to gather market knowledge, leading them to firstly internationalize to psychically close markets (Arenius, 2005). Nonetheless, many authors consider that the psychic distance concept no longer applies to BGFs (e.g. Coviello and Munro, 1997). However, opinions on this topic are diverse and it seems that industry context can also have an impact on the importance of psychic distance. Andersson (2004) states that psychic distance may still be relevant in the early internationalization stages of firms in mature industries. In fact, it seems plausible that the higher trade barriers that low-tech firms face when internationalizing (such as the need of product adaptation, transportation, warehousing and physical establishment that may bring higher legal and bureaucratic barriers or a need of understanding cultural traits and business practices) leads them to chose markets considering psychic distance aspects. Conversely, high-tech firms appear to have a more random approach to market

selection since the products' universal applicability allows them to easily access various countries simultaneously and select them based on opportunities (Solberg et al., 2008). For these companies, psychic distance seems to be overcome by the familiarity among firms' specialists and the nature of their intangible products (Fan and Phan, 2007).

**Proposition 4:** The psychic distance has a higher importance in internationalization for low-tech than for high-tech BGFs.

### **3. Methodology**

Case study research is valuable for testing theory or generating new theory (Eisenhardt, 1989) and better understanding “how” and “why” a specific phenomenon occurs in a real-life context (Yin, 2003). Specifically, a multiple case study approach has been considered more compelling than a single case study research, allowing for a more robust test of theoretical propositions and easier replication in different contexts (Eisenhardt and Graebner, 2007). In this study, we suggest and empirically test propositions regarding differences in internationalization stimuli between BGFs in low-tech and high-tech industries. In the elaboration of this work, the first step was the definition of the research question and analysis of the existing literature. Factors influencing speed, scope and extent of internationalization were identified as well as industry characteristics that would influence these same factors. In order to test and generate new knowledge, we selected specific companies that would fill the two theoretical categories desired, providing examples of polar types. Seven cases were chosen in order to ensure sufficient data without creating subsequent overload during analysis (Eisenhardt, 1989). The next step was the data collection developed through personal, semi-structured interviews with the companies' founders/managers and the

analysis of articles in the media, which enabled us to increase construct validity (Yin, 2003). After the data collection, we conducted a within-case analysis: interviews were transcribed and a database was constructed. Subsequently, we carried out a cross-case analysis through the selection of dimensions and examination of possible within-group similarities and intergroup differences (Eisenhardt, 1989). The analysis of single cases and cross-cases included data reduction, drawing conclusions and verification. The empirical knowledge obtained was then compared with theoretical models and with the propositions previously drawn. Cases that disconfirmed the relationships were sought to be explained, providing an opportunity to extend the theory (Eisenhardt, 1989).

#### **4. Brief Description of the Selected Born Global Firms**

Seven companies were chosen with the following criteria: all companies were founded after the year of 2000, they must have had internationalized until 6 years after inception, to at least 3 countries, with approximately 25% or more of foreign sales and they must belong to either a high-tech or low-tech industry.

Company LT1: This company operates in the restaurant industry, which is a low-tech, mature, yet global and dynamic industry. Their product is the gourmet hamburger, following a differentiation strategy<sup>2</sup>. It was founded in 2007 and started international sales in 2011, expanding their country scope to three foreign countries: Poland, Spain and Brazil. No further growth opportunities in the home country and unsolicited orders were the central internationalization triggers. Their internationalization strategy is based on product location, through networks and partnerships with shopping malls, on industry development and on consumer habits. The entry mode into a foreign location is

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<sup>2</sup> Product differentiation is “a product offering perceived by the consumer to differ from its competition on any physical or nonphysical product characteristic including price” (Dickson and Ginter, 1987)



either foreign direct investment (FDI) or franchising. In 2011, the company had sales from foreign operations (extent) of 2.6%, being currently present only in Brazil (and Portugal), achieving an extent of 22.3%<sup>3</sup>.

Company LT2: This firm is part of the low-tech industry of toys and focuses its offer on the niche segment of scientific toys. This segment is very seasonal and dynamic, obliging the company to innovate constantly. The company's strategy is based on product quality, but prices may be slightly below the competition. It was born in 2008 entering Spain one year later, which was followed by Brazil (2010), Greece (2011), UK, France, Poland and Cape Verde (2012) and Netherlands, Colombia, Italy, Lithuania and Denmark (2013), with a scope of 11 foreign countries. Internationalization was triggered by a small home country with no further growth opportunities, combined with unsolicited orders. Their internationalization strategy is driven by studying consumers' behavior/perception of educational toys and by networks. Foreign markets are accessed with FDI and export through distributors. In 2009 foreign sales were 2-5%, representing today (2013) 25-30% of total sales.

Company LT3: This firm operates within the low-tech footwear industry, producing and selling design shoes, based on a differentiation strategy. This industry is becoming more dynamic and international, with new entrants presenting innovative concepts. The company was born in 2011 and internationalized in the same year to the Netherlands and Spain, followed by the USA in 2012, and by Denmark, Belgium and Italy in 2013. It is now present in 6 foreign markets. Small demand, size and consumers' behavior in

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<sup>3</sup> In this case, revenues are influenced by currency fluctuations and currency conversions. As 1€ is equivalent to 3.0959R\$, the percentage of revenue coming from this foreign location is translated into a lower value when converted to Euros. Therefore, if we were analyzing quantities sold, we would see this ratio tripled. Information on currencies from <http://finance.yahoo.com/currency-converter/#from=EUR;to=BRL;amt=1> 22<sup>nd</sup> of November 2013, at 19:01

the home country for this specific product were the internationalization triggers. Their strategy was based on unsolicited orders, networks, previous experience of the founder and consumers' perception of design and avant-garde shoes. Market entry is based on exports through agents and local partners. In 2011, the company had already 50% of foreign sales and today they have 65% extent of internationalization.

Company HT1: This firm operates within the high-tech industry of microelectronics, developing mixed signal intellectual property, focusing on a differentiation strategy. This is a knowledge-intensive, global and dynamic industry, where companies need to adapt rapidly to new conditions. The company was founded in 2008 but only started sales in 2010. The first internationalization was in 2010 to Switzerland, UK and the US, followed by Korea in 2011, Israel and Germany in 2012 and France in 2013. This totals a scope of 7 foreign countries, with a strategy focused on the technological development of each country. The trigger for internationalization was based on the company's products global nature and orientation. Due to the intangible nature of the product, it can be transported through on-line platforms. From the first year of operations until today, the company has an internationalization extent of 100%.

Company HT2: This company is based on the technology and IT services industry, focusing on interactive TV applications, real time business intelligence solutions and set-top-box test solutions. This knowledge-intensive industry is dynamic and global. The firm was founded in 2008, internationalizing to Belgium in the first year and then to Canada, Poland and Brazil (2009), Denmark and England (2010), Japan, Spain and Italy (2011) and Greece and USA (2012), with a scope of 11 countries. The products' globalness was the main internationalization trigger. The strategic decision to enter each market was based on previous experience, networks and market evolution/economy.

The entry mode is direct export and FDI in Belgium (with an office). The extent of internationalization was 40% in 2008, 51% in 2011 and 55% today (2013).

Company HT3: This firm operates in the cloud services industry, providing a distributed computer platform. This is a knowledge-intensive, high-tech industry. The project for the company started in 2011 but it was officially created in 2013. The service is still offered free of charge and can be accessed through the internet. As of November 2013, the platform users came from 28 countries. The company does not target specific markets but specific knowledge areas, and this triggered immediate internationalization. As a result, their internationalization strategy is focused on consumers' knowledge expertise and based on unsolicited orders. Being an intangible product, it is accessed through the internet. The extent of internationalization was computed using the number of users that came from a foreign location, being 40% in November 2013.

Company HT4: This firm operates in the customer service software industry, developing queue management and self-service solutions. This is a knowledge-intensive and global industry. The company was founded in 2000, starting sales in 2001 and internationalizing to Norway in 2002; to Germany, England, Ireland and Italy in 2004; Spain in 2005; Netherlands and Belgium in 2006 and to Angola, Mozambique, Morocco, Algeria and Colombia in 2009-2010. In 2012, it was bought by an American group (for this analysis, we will focus on the first 6 years after foundation). Its country scope (6<sup>th</sup> year) encompassed 8 foreign countries. The country's small size and the product global nature were key internationalization triggers and the decision to enter each market was based on networks and unsolicited orders. Entry mode is FDI (with offices in Spain) and through export with partners. The extent of internationalization was 20% 3 years after foundation, and 30% 6 years after foundation.

## 5. Discussion of Results

When conducting the analysis of the selected case companies, two important topics were sought to be explained: the possible differences between speed, scope and extent of internationalization in high-tech and low-tech BGFs; and the relative importance of the internationalization factors for both industries, that will also give us some highlights on ‘why’ these two sectors have different internationalization behaviors.

### 5.1 Speed, Scope and Extent of Internationalization in High-Tech and Low-Tech Born Global Firms

Table 1 - Summary of Case-Companies Internationalization Pattern

Company	Speed	Scope	Extent
<b>LT1</b>	4 Years	Foundation: N/A 3 years: N/A*entering 3 countries 4 years after foundation 6 years: 1 Country	Foundation: N/A 3 years: N/A 6 years: 22.3%
<b>LT2</b>	1 Year	Foundation: N/A 3 years: 3 countries Last year (5 after foundation): 12 Countries	Foundation: N/A 3 years: 15% Last year (5): 30%
<b>LT3</b>	At Foundation	Foundation: 2 Last year (2): 6 Countries	Foundation: 50% Last year (2): 65%
<b>HT1</b>	2 Years	Foundation: N/A 3 years: 4 Countries Last year (5): 7 Countries	Foundation: N/A 3 years: 100% 6 years: 100%
<b>HT2</b>	At Foundation	Foundation: 1 Country 3 years: 9 Countries 6 years: 11 Countries	Foundation: 40% 3 years: 51% 6 years: 55%
<b>HT3</b>	At Foundation	Foundation: 28 Countries	Foundation: 40%
<b>HT4</b>	2 Years	Foundation: N/A 3 years: 1 Country 6 years: 8 Countries	Foundation: N/A 3 years: 20% 6 years: 30%

Analyzing these three variables is relatively straightforward. As we can see from table 4, there are certain dissimilarities between industries. In fact, BGFs from high-tech industries seem to be slightly faster in terms of internationalization speed. By computing the mean of the values for this variable, we confirm that high-tech firms have an average speed of 1 year whereas low-tech firms have an average speed of 1.67

years. Nevertheless, the difference is rather small, with companies from both industries internationalizing near foundation. The differences between the two sectors are more notorious when looking at scope and extent of internationalization. It seems clear that high-tech firms target a larger number of foreign countries, with a higher extent of internationalization. If we take the last available data from each firm, we see that high-tech firms have a mean of 13.5 and a median of 9.5 countries (which seems to be more representative) ranging from 7 to 28, with 56.25%<sup>4</sup> of international sales, ranging from 30% to 100%; while low-tech firms have a mean of 7 foreign countries, ranging from 1 to 12, with 39.1% of international sales, ranging from 22.3% to 65%. Even so, as seen in the companies' description, we may notice that all companies are present in various continents and enter simultaneous markets at some point in time. Through the analysis of the 7 case companies, we can clearly state that BGFs are found in both high-tech and low-tech industries. We can also notice low-technology firms entering multiple countries, at or near inception, with a high degree of sales from foreign locations. Yet, as commonly suggested in the literature (e.g. Andersson et al., 2004; Freeman et al., 2006; Rasmussen et al., 2012), high-tech BGFs appear to be more international than low-tech BGFs, achieving a higher country scope and extent of internationalization. The dissemblance between sectors can be somehow explained by the nature of each industry, particularly by extra difficulties of low-tech firms when entering foreign markets and by high-tech industry conditions that highly favor internationalization (Fernhaber et al., 2007). The influence of industry structure on firms' internationalization behavior has already been hypothesized and will be thoroughly discussed in the next section.

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<sup>4</sup>Except for the scope of high-tech BGFs, the mean seems to be a representative measure within this sample because there are no extreme outliers that would destabilize the results (when computing the median, the results were not very distant and seemed to be less representative).

## **5.2 Relative Importance of the Determinants of Internationalization for High-Tech and Low-Tech Firms**

While analyzing the literature on BGFs (as seen and described on the Literature Review, tables 1, 2 and 3), some factors were frequently coupled as influencers of the companies' internationalization process. Our goal is to understand the importance of these factors and if they will influence high-tech and low-tech firms differently.

### *Home Market Characteristics*

Due to product specificities and industry conditions, many BGFs' tend to overlook the domestic market, rapidly entering and focusing on foreign countries (Rennie, 1993; Chetty and Campbell-Hunt, 2004). Even so, and as stated in section 2.4, a home market that proves to be too small with insufficient demand is often a decisive trigger to internationalization, especially in low-tech sectors (Evers, 2010). In fact, for companies LT1 and LT2, a small domestic market proved to be insufficient. Once they were present in the most important shopping malls in Portugal, there was no place to grow: *"We will always bump in the size of the country (...) the size of the country forced us to leave"* (Founder, Company LT1). Conversely, lack of demand in the domestic market did not seem to be important, since both companies had achieved the breakeven point before internationalization. Company LT3 believes that if they had been established first in Portugal, they would not have the same growth opportunities. The market size was not enough and so wasn't the demand for their product. For these low-tech companies, home country characteristics were important push factors to internationalization. On the other hand, for companies HT1, HT2, HT3 and HT4, the home market seems to be disregarded from the beginning. As their products are very specialized, with a strong global nature, the home market alone wouldn't be a suitable choice. The Portuguese

market is many times seen as irrelevant: *“In Portugal we have no chance, we are born in a global world (...) there’s no Portuguese market.” (CEO, Company HT1).*

**Result 1:** For low-tech companies, a small home country (LT1, LT2 and LT3) and lack of demand (LT3) forces them to go abroad. High-tech companies seem to disregard the home market from the beginning, due to the products’ intrinsic characteristics. Our Proposition 1 was supported by our findings, since home market characteristics were a trigger for low-tech firms’ internationalization, while for high-tech firms the most important trigger was the product characteristics and global nature.

### *Networks*

Research shows that gaining access to networks helps accelerating a firm’s learning process. Networks will provide international market access, financial aid and access to distribution channels (Freeman and Cavusgil, 2007; Petterson and Tobiassen, 2012). Oviatt and McDougall (2005) defend that networks help entrepreneurs identifying opportunities, hence influencing country choice. In fact, for our case-companies, networks were essential in the internationalization process. For company LT1, networks enabled the expansion to foreign markets. More importantly, they were also the reason for failure in Spain: *“We started in Spain after talking with a group that came to us (...) they realized that they were not going to be able to implement the expansion plan and we decided to suspend it” (Founder, company LT1).* Company LT2 also followed a partnership when they first internationalized to Spain. For this company, some partnerships are especially important to give credibility to the products. Also for company LT3, networks facilitate the entrance in foreign markets: *“We entered the Netherlands because we were contacted by the store (...) there have been many*

*unexpected opportunities and proposals” (Founder, Company LT3).* As previously proposed, for these low-tech companies, networks have a conspicuous role: because the firms need to establish a physical presence in the foreign market, they need to acquire market knowledge (what are the best places/stores/streets to be in that country?). Host country partners are the ones that typically provide this knowledge and the ability to enter the market. On the other hand, company HT1 takes advantage of partnerships through their international presence and knowledge, which allows the entrance in the desired markets. Also for company HT2, networks enable them to reach new potential clients. Company HT3 is very based on unsolicited orders since their product is present online and free of charge. For company HT4, unsolicited orders were important in terms of market choice. As this company needs to have a close product and sales monitoring in the foreign market, local partners are important. For these companies, networks are also based on collaboration with other companies for the combination/complement of technological products: *“Partnership are made through our partners’ service skills, by knowing their products, developing solutions on top of their solutions, or by using their technology” (Founder, Company HT2).* Finally, in all industries, partnerships were important in terms of financial support (companies LT1, LT2, HT3 and HT4) either through the entry mode (e.g. franchising) or venture capital, business angels, etc.

**Result 2:** Networks have the uttermost importance for BGFs in all industries, being enablers of internationalization, especially in terms of market choice, entry and expansion. We confirmed that they will have a prominent role in different industries: for low-tech firms, host country networks will give market knowledge and enable the establishment in the foreign country, while for high-tech firms they will be based on product complement and strategic cooperation. Thus, our Proposition 2 is supported.



### *The Entrepreneurial Actor*

As aforementioned, BGFs founders' characteristics are central to their early and rapid internationalization. In all the companies studied, the entrepreneurs seem to have a global orientation, with a positive and proactive attitude toward international affairs. They believe that their products will be successful internationally and look at foreign markets as having vast potential: *"I hope that Portugal soon becomes a holdover of sales, a very insignificant thing"* (Founder, Company LT1). They are usually not risk averse and have growth ambitions. In fact, for companies LT1, LT2 and LT3, the internationalization process was very based on the founders' growth objectives: *"[The Company's founder] is not risk averse because he is a true entrepreneur. Our first international sales had much to do with his desire to do things, to get more customers"* (Vice-president, Company LT2), while for high-tech companies it was seen as a need or an unavoidable reality: *"In a business like ours it does not make sense to limit geographically (...) we usually say that we are geographically agnostic"* (Communications Strategist, Company HT3). Regarding the entrepreneurs' experience, at least one founder in each company had previous industry experience (LT3, HT1, HT2 and HT4) or international experience (LT1, LT3, HT1, HT2, HT3 and HT4) either from working in a multinational company or studying/living abroad. It is an important, yet not mandatory (e.g. LT2 firm), determinant on BGFs' internationalization. We can also see a tendency of high-tech companies' founders to have previous experience in a related (technological) industry (HT1, HT2 and HT4) and that all these entrepreneurs have a college degree that is related to the company's industry, which does not happen in 2 out of the 3 low-tech companies (LT1 and LT2).

**Result 3:** BGFs' entrepreneurs have a global orientation, with a positive attitude toward international affairs. Characteristics such as growth ambitions and low risk aversion seem to be more important for low-tech firms, enabling these entrepreneurs to surpass some of the constraints faced when internationalizing. Previous experience/educational background in a related industry is clearly more important for high-tech firms. Therefore, our Proposition 3 is somehow confirmed: in fact, some intrinsic characteristics of the entrepreneurs seem to be more important for low-tech firms. Previous industry experience and a related educational background seems to be irrelevant for low-tech firms and crucial for high-tech ones.

#### *Psychic Distance*

As previously seen, BGFs are typically obliged to set aside psychic distance, targeting markets regardless of cultural dissimilarities (Freeman and Cavusgil, 2007), but this may not always be the case. For our low-tech companies, geographical distance is a key factor to consider since a physical presence/export is a reality when internationalizing: *"There is a barrier (...) to introduce a new product I have to send it [to the distributor], he has to see it, translate it, it's complicated, the process is very time consuming."* (Vice-President, Company LT2). This movement of goods brings important legal and economic barriers (such as customs and other bureaucracies, company establishment, trademarks, etc.). Moreover, there is a tendency for these companies to be affected by behavioral and taste preferences within different cultures. For company LT1, the concept of shopping malls and fast-food needs to be rooted. Company LT2 targets countries where the parents feel the need and understand the value-added of scientific, more expensive toys: *"[The company targets] parents that care about their children's education (...) markets with a strong middle and upper-middle class"* (Vice-President,

Company LT2). Company LT3 will mostly enter countries where consumers understand the quality and innovation of their design shoes. As all these companies end up adapting their products to the different markets, culture seems to be important. Conversely, high-tech companies tend to target countries that are technologically advanced, irrespective of cultural similarities: *"Our strategy is to be present in [technologically] evolved markets (...) there is no reason for a company, in this business area, to not be able to internationalize to wherever it wants"* (Founder, Company HT2). For companies HT1 and HT3, language has no influence whatsoever, since English is used as a universal language. For companies HT2 and HT4, this can be a cultural challenge, because their products have a higher interface with the final user. For company HT4, culture plays a higher role mostly because its products have to be adapted to different cultural realities: *"A software product, such as ours, which has a lot of interface with the final user, besides being multilingual, must allow the incorporation of new features to be customized to other countries (...) the product that we sell in Africa or Latin America could not be sold in the U.S. and Europe (...) Asia is not an option right now (...) because their habits are different, the product would require changes, the hardware that we build here couldn't be sold there"* (General Manager, Company HT4). Finally, and if we were to cross-check these results with the countries entered by the firms, we would see that, indeed, company LT1 entered Poland (which failed due to cultural issues), Spain and Brazil (culturally close markets, that accept fast-food); company LT2 first entered Spain, a culturally and geographically close market, where the product was accepted; company LT3 entered the Netherlands, a country with higher purchasing power. Company HT1 claims to have entered a global market, in which the first client *'happened to be'* from Switzerland. Both HT1 and HT2 target mainly technologically

developed markets. Company HT3 does not normally target specific countries, but when it does, it goes after knowledge areas. Finally, company HT4 offers a product that is adapted to different markets, which sometimes hardens the internationalization to culturally dissimilar locations. Consequently, psychic distance still applies when culture has a high impact on the firm's operations. Yet, it may not be an impediment for the companies to enter such markets. It is rather an extra difficulty to be overcome.

**Result 4:** When cultural differences lead to a consequent product adaptation, and a physical presence is necessary, the psychic distance concept still applies and hardens the internationalization to these countries. Even though this is generally a reality linked with low-tech firms that base their product offer in tangible products, it is also a reality in some high-tech firms and, therefore, our Proposition 4 is not entirely supported.

## **6. Limitations, Future Research and Contributions**

This study bears some limitations. The fact that it is based on a limited number of firms hinders the possible replication of the inferences developed. Also, as all the firms under study are Portuguese, a direct influence based on country-specific variables may be expected and the results' applicability may be very particular to the Portuguese market or, perhaps, to other small European countries. Future research should focus on consolidating these findings, through the analysis of further companies, in different country contexts and industries. Afterwards, a quantitative analysis might be fruitful, allowing for a confirmatory approach. Finally, with this study, we have brought new knowledge to the born global literature since the comparison between low-tech and high-tech industries is scarce. We have also shed some light on the factors that influence the internationalization pattern of BGFs. Entrepreneurs of newly-established firms or

the ones looking for a business opportunity may take advantage of this study by understanding that, despite the firms' small size and lack of resources, rapid internationalization may be pursued. More importantly, entrepreneurs can now understand the relevance of these factors that highly influence internationalization and how to take advantage of them, improving their company's internationalization path.

## **7. Conclusions**

This study had the objective of identifying and explaining possible differences among low-tech and high-tech BGFs' internationalization process. By reviewing the literature, three internationalization-pattern dimensions were identified, along with factors that influence this pattern. Through the empirical analysis of seven BGFs, we found interesting differences: low-tech firms' are often based on tangible resources and, even though their products are seen as having global potential, internationalization barriers are a complex reality. They are mostly driven to internationalization due to home market characteristics and entrepreneurial traits that, along with host country networks, help them to overcome difficulties and establish in the foreign market. For high-tech companies, internationalization barriers are lower due to their intangible and global products that lead them to international affairs. For these companies, previous industry experience, a related academic background and collaborative networks are important. Although low-tech firms face more constraints and are usually more affected by psychic distance, they are able to internationalize rapidly, entering multiple markets and quickly expanding the percentage of foreign sales, as described by Jones (1999). All companies, irrespective of industry were able to accelerate their internationalization path to become global. Accordingly, they did not perceived foreign markets as mere adjuncts to the domestic market and did not follow a stage approach (Knight and Cavusgil, 1996).

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<sup>5</sup> The websites are not specified in order to keep the confidentiality of each company.

## Appendixes

### Appendix 1 - Speed, Scope and Extent Details of the Case-Companies

	Foundation Year	+1 Year	+2 Years	+3 Years	+4 Years	+5 Years	+6 Years	Last info considered*:
<b>LT1</b>	N/A				Scope: 3 Extent: 2.6%	Scope: 1 Extent: 13.5%	Scope: 1 Extent: 22.3%	Scope: 1 Extent: 22.3%
<b>LT2</b>	N/A	Scope: 1 Extent: 2-5%	Scope: 2 Extent: 10%	Scope: 3 Extent: 15%	Scope: 7 Extent: 20%	Scope: 12 Extent: 25-30%	N/A	Scope: 12 Extent: 30%
<b>LT3</b>	Scope: 2 Extent: 50%	Scope: 3 Extent: 60%	Scope: 6 Extent: 65%	N/A				Scope: 6 Extent: 65%
<b>HT1</b>	No internationalization		Scope: 3 Extent: 100%	Scope: 4 Extent: 100%	Scope: 6 Extent: 100%	Scope: 7 Extent: 100%	N/A	Scope: 7 Extent: 100%
<b>HT2</b>	Scope: 1 Extent: 40%	Scope: 4 Extent: 70%	Scope: 6 Extent: 51%	Scope: 9 Extent: 52%	Scope: 11 Extent: 54%	Scope: 11 Extent: 55%	N/A	Scope: 11 Extent: 55%
<b>HT3</b>	Scope: 28 Extent: 40%	N/A						Scope: 28 Extent: 40%
<b>HT4</b>	N/A		Scope: 1 Extent: 16%	Scope: 1 Extent: 20%	Scope: 5 Extent: 20%	Scope: 6 Extent: 27%	Scope: 8 Extent: 30%	Scope: 8 Extent: 30%

\* Company HT4 is older than the other companies. For the purposes of this study, only the first 6 years are being considered.